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10/522,771

01/28/2005

Toyoki Fujihara

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EXAMINER

LEE, CYNTHIA K

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/522,771 | Applicant(s) FUJIHARA ET AL. | |
| | Examiner CYNTHIA LEE | Art Unit 1795 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,12,14-21 and 24-29 is/are pending in the application.
- 4a) Of the above claim(s) 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,14-21 and 24-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

This Office Action is responsive to the amendment filed on 7/28/2010. Claims 1, 3-9, 12, 14-21, and 24-29 are pending. Claim 12 is withdrawn from further consideration as being drawn to a non-elected invention. Applicant's arguments have been considered, and are not persuasive. Claims 1, 3-9, 14-21, and 24-29 are finally rejected for reasons stated herein below.

The 35 USC 112, 2nd rejection has been withdrawn in light of the amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-9, 14-21, 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuhara (JP 2002-100357) in view of Kurokawa (JP 06-243871).

Kazuhara discloses a lithium ion battery comprising a material that stores and releases lithium ion [0024] and positive active material comprising a lithium-nickel-manganese complex having a R-3m rhombohedral structure expressed by $\text{Li}_x\text{Ni}_y\text{Mn}_{1-y-z}\text{M}_z\text{O}_2$ and a lithium-cobalt complex having a R-3m rhombohedral structure expressed by Li_xCoO_2 . See Abstract. The lithium-nickel-manganese complex consists of a rhombohedron stratified (Applicant's layered structure) rock salt type structure [0017].

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In particular, the formula $\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ is disclosed [0027] (Applicant's claims 6, 7, 14-17).

The mean particle diameter is 4 micrometers [0027] (Applicant's claims 8, 18 and 19).

The lithium cobaltate has a mean particle diameter of 7 micrometers [0027] (Applicant's claims 9, 20 and 21).

The lithium-nickel-manganese complex was mixed with lithium cobaltate. The mixture was mixed with polyvinylidene fluoride (binder) [0010].

Kazuhara discloses that a flat cell, a wound type cylindrical cell, and button cell, etc are formed [0026]. Absent specific degree of deformation of the outer casing, the Examiner notes that all materials possess some form of deformation and thus, the battery of Kazuhara deforms with an internal pressure of the battery.

Kazuhara discloses a lithium metal complex oxide, but does not disclose having fluorine (Applicant's claims 1, 4, 5). Kurokawa teaches of fluorinating a lithium transition metal oxide. See Abstract. Kurokawa teaches that fluorination contributes to retaining the crystal structure during charge and discharge cycles [0014]. Fluorination occurs by adding LiF (lithium fluoride) raw materials LiOH, and $\text{Ni}(\text{OH})_2$ (Applicant's raw materials) and calcinating the mixture at 750 C for 20 hrs [0017]. LiF is used as the fluorine compound (Applicant's claims 24, 26, and 28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to fluorinate the positive active material of Kazuhara by calcinating the raw materials with LiF, as taught

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by Kurokawa, for the benefit of preventing the crystal structure of the positive active material from collapsing.

It has been held that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from the product of prior art, the claim is unpatentable even though the prior product was made by a different process.”

In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Regarding claims 25, 27, and 29, Kurokawa teaches that the fluorination process stabilizes the crystal structure of the positive active material, thus clearly teaching that the fluorine compound is a result effective variable. It has been held by the courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05. Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). MPEP 2144.05

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Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuhara (JP 2002-100357) in view of Kurokawa (JP 06-243871) as applied to claim 1, further in view of Goto (US 6444351).

Kazuhara modified by Kurokawa teaches all the elements of claim 1 and are incorporated herein. Kazuhara modified by Kurokawa does not teach an aluminum outer casing with a thickness of 0.5 mm (or 500 μ m) or below. Goto teaches of a wound battery casing with a laminated nylon and aluminum layer having a thickness of 40 μ m (9:63-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the battery of Kazuhara modified by Kurokawa with the casing as taught by Goto for the benefit of protecting the inside components of the battery. Further, it has been held by the court that the selection of a known material based on its suitability for its intended use is *prima facie* obvious. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

Response to Arguments

Applicant's prior art arguments filed 7/28/2010 have been fully considered but they are not persuasive.

Applicant asserts that LixNi_{1-y}CoyOwFa disclosed in Kurokawa does not include manganese. Therefore, LixNi_{1-y}CoyOwFa does not correspond to the lithium-nickel-manganese-M complex oxide disclosed in Kazuhara. As taught by Nishida (EP 1246279), which was cited in the previous Office Action, teaches in paragraphs [0075] and [0087], the same effect (of fluorine) is not necessarily obtained in different types of positive active materials. Therefore, a person of ordinary skill in the art could not

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reasonably expect the effect of fluorine in Kurokawa to apply to the battery of Kazuhara in which the positive active material is different from that of Kurokawa and would not have a proper reason to add fluorine to the lithium- nickel-manganese complex oxide of Kazuhara.

In response, it is noted that the rejection is not based on Nishida. Although the difference in the compounds between Kazuhara and Kurokawa is the presence and the absence of manganese, respectively, Kurokawa teaches that fluorination is applied to a “multiple oxide” [0014], or a “composite oxide.” Kurokawa’s general teaching that fluorinating a lithium composite metal oxide contributes to retaining the crystal structure during charge and discharge cycles in a lithium secondary battery [0014] would allow one of ordinary skill in the art to expect a similar effect in other lithium composite metal oxides.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CYNTHIA LEE whose telephone number is (571)272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-12922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Lee/
Examiner, Art Unit 1795

/Patrick Joseph Ryan/
Supervisory Patent Examiner, Art
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